

REMARKS

Applicants appreciate the Examiner's thorough examination of the subject application and request reconsideration of the subject application based on the foregoing amendments and the following remarks.

Claims 1-24 are pending in the subject application.

Claims 1-24 stand rejected under 35 U.S.C. §102, 35 U.S.C. §103, 35 U.S.C. §112, first paragraph, and/or 35 U.S.C. §112, second paragraph.

Claims 1-17 and 24 were canceled in the foregoing amendment without prejudice to prosecuting these claims in a subsequently filed continuing application.

Claims 25- 34 were added to more particularly claim the focal point dislocation detection method and optical pick-up apparatus of the present invention and thus also address the non-art based rejections of the pending claims.

Claims 17-20, and 22 were amended to reflect changes in dependency resulting from the cancellation and addition of claims. This amendment to claim 18 also addresses the non-art based rejection of the Examiner.

Claims 19, 21, and 23 were amended as suggested by the Examiner.

The amendments to the claims are supported by the originally filed disclosure. In particular support for the added claims is as follows:

For added claim 25, see original claim 1 and the subject application with reference, for example, to page 33, lines 18-25 thereof.

For added claims 26-27, see the disclosure of original claims 2-4.

For added claim 28, see original claim 7 and the subject application with reference, for example, page 35, line 15 to page 36, line 13 thereof.

For added claims 29 and 30, see the disclosure of original claims 8 and 9.

For added claim 31, see original claim 10 and the subject application with reference, for example, to page 33, lines 18-25 thereof.

For added claims 32 and 33, see original claims 11-13.

For added claim 34, see original claim 16 and the subject application with reference, for example, page 35, line 15 to page 36, line 13 thereof.

The specification was objected to and correction required. The specification was amended as suggested by the Examiner to overcome the objections. The specification also was further amended to address grammatical, spelling and typographical mistakes noted by Applicants during the preparation of the within Response. The specification also was amended for clarity and consistency of expression and terminology. The amendments to the specification do not introduce new matter because they either are editorial in nature or are supported by the originally filed disclosure.

35 U.S.C. §112, FIRST PARAGRAPH REJECTIONS

Claims 1-24 stand rejected under 35 U.S.C. 112 because the subject application allegedly fails to provide an enabling disclosure of features of claims, 1, 2, 5, 6 10 and as more particularly set forth on pages 2-3 of the above-referenced Office Action. Applicants respectfully traverse.

As indicated herein, claims 1-16 and 24 were canceled in the foregoing amendment, claims 25-34 were added and claims 17-23 were amended so that each depends directly or ultimately from one of the added independent claims. As also indicated herein, the added claims were written so as to address the non-art based rejections set forth in the Office Action. As such, Applicants respectfully submit that presently rejected claims 17-23 overcome the specific grounds for the rejection.

Notwithstanding the foregoing amendments, Applicants offer the following as further clarification and reference to the specification of the originally filed application for purposes of describing the technical content of the present invention as assistance in the Examiner's review of the claimed invention. In particular, reference should be made to the discussion on pages 26 - 37 of the subject application and figures 1-10 thereof along with the following remarks.

The discussion on pages 29-30 of the subject application describes in basic terms the present invention. As stated in the subject application, when spherical aberration is generated in the light beam, with reference to Fig. 5b, a focal point A is located in a position beyond the best image point on the optical axis OZ with respect to the lens outer peripheral section, and a focal point B is located in a position closer than the optimum image point with respect to the lens inner peripheral section, which is closer to the optical axis OZ. Therefore, an amount of focal point dislocation in the case where spherical aberration is generated in the light beam, is indicated by a distance "a" from the optimum image point "O" to the focal point A, or a distance "b" from the optimum image point "O" to the focal point b. Thus, it is explained that when spherical

aberration is generated in the light beam it is necessary to converge the light beam that has become separated onto the optimum image point.

The discussion that follows on pages 30-32, describes detection of the focal point dislocation without the generation of the offset when spherical aberration is generated in the light beam. Referring now to Fig. 6 of the subject there is shown a curve of wavefront 17 having spherical aberration and an ideal wavefront 16. As more particularly described in the subject application, the positions of the focal points is detected in accordance with the light beam that corresponds to the regions 18a, 18b which are regions "of the extreme value of the wavefront 17 having the spherical aberration or in the vicinity of the extreme value." In this way it is explained that it is possible to detect the focal point dislocation without being significantly affected by the spherical aberration, because dislocation of the focal point position (the optimum image point O) of the optical pickup apparatus is coincident with the dislocation of the focal point position of the extreme value. In sum, and as indicated on page 32 of the subject application the regions 18a, 18b of the wavefront 17 having the aberration includes the extreme value of the wavefront and the vicinity of the extreme value.

The discussion that follows from page 32 also includes a discussion as to determining where the regions 18a, 18b of the wavefront 17 having an aberration are located. There is shown in Fig. 8 of the subject application results of calculations of an amount of the offset of the focus error signal when the focal point dislocation is detected using a region within the 60% to 85% region of the light beam effective diameter and the amount of offset using the entire or whole region of the light beam. In sum, the FES has almost no offset even in the case where the

spherical aberration is generated due to the variation in thickness of the cover glass when focal point dislocation is determined using light in the region within the 60% to 85% region of the light beam effective diameter.

From the grounds for rejection in relation to pending claims 2, 3, 5 and 11-13, it appears that the language regarding the effective diameter, for example "60% of the effective diameter," in the claims is being misinterpreted as meaning "NA = 0.6." Claims 2, 3, 5 and 12 also appear to suggest that the light beam diameter is defined by the NA because these claims indicate that the "a light beam of a 60% to 85% region of a light beam effective diameter ... is regulated by the numerical aperture of said objective lens." This misinterpretation apparently flows from inconsistent language in the subject application where the usage of "NA" and "numerical aperture" therein should more correctly have read as "aperture diameter."

In the present invention, the light beam effective diameter "r" is not the NA of the objective lens, but rather is the diameter of the light beam used in the device. That is the diameter of the light beam as determined by the aperture. This can be seen for example from the Fig. 6 of the subject application and the discussion at page 30, line 15 to page 33, line 25 thereof. It also should be noted that the misinterpretation referred to above would necessarily be inconsistent with the arrangement of the present invention as described in the subject application.

Accordingly, in addition to the foregoing amendments to the claims, the specification of the subject application was amended so as to more correctly include reference to aperture diameter in connection with the disclosure of the present invention.

Accordingly, claims 17-23 satisfy the requirements of 35 U.S.C. §112, first paragraph and, therefore, these claims are allowable and the specification is considered acceptable.

35 U.S.C. §112, SECOND PARAGRAPH REJECTIONS

Claims 5-7, 14-16, 18 and 24 stand rejected under 35 U.S.C. §112, second paragraph on the grounds that there are antecedent basis, indefiniteness and/or vagueness concerns with the claims 5, 14 and 18. The office Action further provides that the other claims not specifically listed stand rejected because of their dependency from a rejected claim with an identified concern. The following addresses the rejections provided by the Examiner.

As indicated above, claims 5-7, 14-16 and 24 were canceled in the foregoing amendment. As such, Applicants do not believe that the within rejection of these claims need be addressed further herein.

As to claim 18 and as indicated herein, claim 18 was amended to reflect changes in dependency resulting from the cancellation and addition of claims. It is further indicated herein that this amendment to claim 18 also addresses the non-art based rejection of the Examiner. Therefore, Applicants consider the antecedent basis concern in the Office Action overcome.

Accordingly, it is respectfully submitted that claim 18 satisfies the requirements of 35 U.S.C. §112 and, as such, are in a condition for allowance.

35 U.S.C. §102 REJECTIONS

The Examiner rejected claims 1-4, 10-13, 17 and 18 under 35 U.S.C. §102(e) as being anticipated by Maeda et al. [USP 6,320,699; “Maeda”]. Applicants respectfully traverse as discussed below.

As indicated herein, claims 1-4, 10-13 and 17 were canceled in the foregoing amendment. As such, Applicants do not believe that the within rejection of these claims need be addressed further herein.

As to claim 17 and 18, these claims were amended so as to depend from added claims 31 and 34 respectively. As indicated herein, claims 31 and 34 are considered to be allowable over the within grounds for rejection. As such, at least because of the dependency from a claim that is believed to be allowable, each of claims 17 and 18 also is considered to be allowable.

As provided in MPEP-2131, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Or stated another way, “The identical invention must be shown in as complete detail as is contained in the ... claims. *Richardson v Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ 2d. 1913, 1920 (Fed. Cir. 1989). Although identify of terminology is not required, the elements must be arranged as required by the claim. *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990). It is clear from the foregoing remarks that the above identified claims are not anticipated by Maeda.

As the Federal Circuit also has indicated, in deciding the issue of anticipation, the trier of fact must identify the elements of the claims, determine their meaning in light of the specification

and prosecution history, and identify *corresponding elements* disclosed in the allegedly anticipating reference (emphasis added, citations in support omitted). *Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Company et al.*, 730 F. 2d 1452, 221 USPQ 481,485 (Fed. Cir. 1984).

In concluding that the '770 Patent did not anticipate the claims, the Federal Circuit in *Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Company et al.*, at 221 USPQ 485-486, further provides that:

The '770 patent discloses an entirely different device, composed of parts distinct from those of the claimed invention, and operating in a different way to process different materials differently. Thus, there is no possible question of anticipation by equivalents. Citations omitted.

It is clear from the remarks hereinafter, that the allegedly corresponding elements disclosed in Maeda do not in fact correspond to the elements of the claimed invention. It also is clear that the apparatus described in Maeda functions and operates in a different manner from that of the claimed invention. As also indicated herein, the method disclosed and taught in Maeda is completely different from that claimed and taught by Applicants. Thus, there can be no disclosure or teaching in Maeda of Applicants' invention.

It is respectfully submitted that for the foregoing reasons, claims 17 and 18 are patentable over the cited reference and satisfy the requirements of 35 U.S.C. §102(e). As such, this claim/ these claims, including the claims dependent therefrom are allowable.

35 U.S.C. §103 REJECTIONS

Claims 8-9 and 19-23 stand rejected under 35 U.S.C. § 103 as being unpatentable over the cited prior art for the reasons provided on page 6 of the above-referenced Office Action.

As indicated above, claims 8-9 were canceled in the foregoing amendment. As such, Applicants do not believe that the within rejection of these claims need be addressed further herein. Because claims were amended in the foregoing amendment, the following discussion refers to the language of the amended claim(s). However, only those amended features specifically relied on in the following discussion shall be considered as being made to overcome the prior art reference. The following addresses the specific rejections provided in the above-referenced Office Action as to claims 19-23.

CLAIMS 19-23

Claims 19-23 stand rejected as being unpatentable over Maeda et al. [USP 6,320,699; “Maeda”] in view of Sakai [USP 6,339,562] for the reasons provided on page 6 of the above referenced Office Action. Applicants respectfully traverse.

As to claim 19-23, these claims were amended so each depends directly or ultimately from added claim 31, which claim as indicated herein is considered to be allowable. As such, at least because of the dependency from a claim that is believed to be allowable, each of claims 19-23 also is considered to be allowable. Applicants also offer the following additional observations regarding the suggested combination of references.

Applicants would note that the secondary reference is being used for a specific teaching of features of each of claims 19-23. As such, the secondary reference fails to overcome the deficiencies noted herein regarding the primary reference, Maeda.

Further Sakai discloses an optical pickup device "capable of performing precise recording/reproduction operations ... even with assembly errors produced in assembling the pickup device, by optimizing shapes of sub light receiving sections" (see, for example, col. 3, lines 14-23 thereof). Thus, the invention in Sakai is directed to correcting assembly errors, which are a totally different correction target from that of the present invention. As such, the invention in Sakai has a vastly different objective from that of the present invention. Therefore, Sakai does not disclose anything at all about the features recited in the claims of the present application, let alone contain a suggestive description.

Applicants also would note that given the teachings and disclosures in Maeda, there would be no motivation to combine the references as such a combination would necessarily mean that the intended purpose and function of the invention described in Maeda would be irretrievable altered. In particular, the invention in Maeda would be altered without any suggestion in either reference that the suggested modification would be reasonably successful.

As provided in MPEP 2143.01, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F. 2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F. 2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

As provided above, the references cited, alone or in combination, include no such teaching, suggestion or motivation.

Furthermore, and as provided in MPEP 2143.02, a prior art reference can be combined or modified to reject claims as obvious as long as there is a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Additionally, it also has been held that if the proposed modification or combination would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. Further, and as provided in MPEP-2143, the teaching or suggestion to make the claimed combination and the reasonable suggestion of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). As can be seen from the forgoing discussion regarding the disclosures of the cited references, there is no reasonable expectation of success provided in the reference or the admitted prior art. Also, it is clear from the discussion herein that the modification suggested by the Examiner would change the principle of operation of the apparatus and method disclosed in the primary reference, Maeda.

As provided by the Federal circuit, a 35 U.S.C. §103 rejection based upon a modification of a reference that destroys the intent, purpose or function of the invention disclosed in a reference, is not proper and the *prima facie* case of obviousness cannot be properly made. In short there would be no technological motivation for engaging in the modification or change. To the contrary, there would be a disincentive. *In re Gordon*, 733 F. 2d 900, 221 USPQ 1125 (Fed. Cir. 1984). In the

present case it is clear that if the cited reference was modified in the manner suggested by the Examiner it would destroy the intent, purpose or function of the device as taught by Maeda.

It is respectfully submitted that for the foregoing reasons, claims 19-23 are patentable over the cited reference(s) and satisfy the requirements of 35 U.S.C. §103. As such, these claims, including the claims dependent therefrom are allowable.

CLAIMS 25-34

As indicated above, claims 25-34 were added to more particularly claim the focal point dislocation detection method and optical pick-up apparatus of the present invention and thus also address the non-art based rejections of the pending claims. As hereinabove discussed, the added claims are clearly supported by the originally filed disclosure, including the originally filed claims.

It also is respectfully submitted that these added claims are patentable over the cited prior art on which the above-described rejection(s) are based. For the focal point dislocation detection method of the present invention, in particular the method as set forth in added claim 25, the claimed methodology is such as to allow one to accurately detect a focal point dislocation that is hardly affected by the spherical aberration. Thus, even if the converging optical system has a spherical aberration, the focal point dislocation detection method of the present invention including the methodology of claim 25 can accurately detect the focal point dislocation. Applicants would further note that the optical pickup apparatus of the present invention including the arrangement as set forth in added claim 31 is such as to produce similar effects.

In contrast to the present invention, Maeda disclose an aberration correcting apparatus that can remove a spherical aberration based on a thickness error of an optical disc substrate and widen a thickness error permission range of the optical disc substrate even if an objective lens with a high numerical aperture is used (see, for example, col. 1, line 65 to col. 2, line 6 thereof). The aberration correcting apparatus includes a thickness detection photodetector that detects a change in thickness of the optical disc substrate to generate an output signal (see, for example, col. 6, lines 7-16 thereof).

The aberration correcting apparatus in Maeda further includes a pair of correcting plates with mutually complementary curved surfaces. The plates are located along the optical path. By rotating the pair of correcting plates around the optical axis of light flux according to the output signal, the apparatus partially changes the length of the optical path of the light flux to remove a spherical aberration (see, for example, col. 7, lines 12-65 thereof).

As to focal point dislocation, and in contrast to the present invention, Maeda merely describe that it is automatically corrected by a pickup's focusing mechanism (see, for example, col. 7, lines 1-8 thereof). It is clear from the disclosure in Maeda, that Maeda does not pay special attention to the detection of focal point dislocation; rather Maeda employs a technique that was common at the time of filing an application for the patent. In other words, Maeda does not disclose, teach or suggest anything *but* an aberration correcting apparatus which, by moving (rotating) a pair of correcting plates vertically to an optical axis, partially changes the length of the optical path of light flux to remove a spherical aberration. Maeda is *totally silent* about the accurate detection of focal point dislocation. In sum, Maeda has a vastly different objective from

that of the present invention and thus, does not disclose the features and elements as set forth in the claims of the subject application.

As indicated herein, the system, apparatus and method in Maeda discloses and teaches a method which separately detects variations in thickness of the optical disc and using such measurements compensates for any spherical aberration that may occur because of such variations. As such, it necessarily follows that Maeda cannot disclose nor describe, either inherently or explicitly a method for detecting focal point dislocation in a light beam in which spherical aberration is present. Thus, the features in Maeda allegedly corresponding to the steps of the method claimed by Applicants and the features of the apparatus claimed by Applicants cannot correspond to the method steps and features of the apparatus of the present invention.

Applicants also would note that the reference to Fig. 11 in Maeda also is of no value as the appearance of this figure in the discussion in Maeda is in connection with the shaping of the correction plates and their rotation; not the disclosure of an entirely different methodology and apparatus whereby focal point dislocation can be detected with a light beam containing spherical aberration.

CLAIMS 19, 21, 23 & 24

As indicated above, claims 19, 21, 23 and 24 were objected to and correction required. Each of claims 19, 21, 23 and 24 were amended as suggested by the Examiner.

It is respectfully submitted that for the foregoing reasons, claims 19, 21, 23 and 24

SEPCIFICATION OBJECTIONS

The Examiner objected requested correction thereof. The following addresses the specific objections of the Examiner.

As indicated herein the specification was amended as suggested by the Examiner. As also indicated herein, during preparation of the within response, Applicants noticed some grammatical, spelling and typographical mistakes in the specification. Applicants also have amended each of these identified occurrences as well in the foregoing amendment.

As indicated above in regards to the §112, second paragraph discussion, Applicants also have amended the subject application to more clearly indicate that regulation is accomplished by an aperture diameter of the optical lens.

It is respectfully submitted that for the foregoing reasons, the specification satisfies applicable Patent laws and rules and, therefore is considered acceptable. It also is respectfully submitted that the foregoing amendments do not introduce new matter and thus entry of same is respectfully requested.

It is respectfully submitted that the subject application is in a condition for allowance. Early and favorable action is requested.

Although claims were added to the subject application, Applicants believe that additional fees are not required. However, if for any reason a fee is required, a fee paid is inadequate or

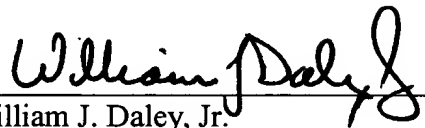
Applicant: H. Tadano, et al.
U.S.S.N.: 09/990,797
RESPONSE TO OFFICE ACTION
Page 37 of 37

credit is owed for any excess fee paid, the Commissioner is hereby authorized and requested to
charge Deposit Account No. **04-1105**.

Respectfully submitted,
Edwards & Angell, LLP

Date: July 7, 2004

By: _____


William J. Daley, Jr.
(Reg. No. 35,487)
P.O. Box 55874
Boston, MA 02205
(617) 439- 4444

Customer No. 21,874

Bos2_447210.1